

Nuclear Free Local Authorities new nuclear monitor



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UK GOVERNMENT FUNDED DECOMMISSIONING PROGRAMME & WASTE TRANSFER PRICING METHODOLOGY CONSULTATIONS

The UK Government's consultations on revised Funded Decommissioning Programme (FDP) Guidance (1) and updated Waste Transfer Pricing (WTP) methodology (2) close on **8th March**.

The revised FDP Guidance consultation follows an earlier consultation carried out in February 2008. (3) The Government responded to comments made during this consultation in September 2008. (4) [See "Funding Provision for Nuclear Waste and Decommissioning" for a reminder of earlier discussions. (5)]

The Energy Act 2008 requires operators of new nuclear power stations to have in place arrangements which make prudent and effective plans for decommissioning, managing and disposing of the waste they produce, and arrangements in place to meet the full costs including their full share of waste management and waste disposal costs. The Act also requires operators to have a Funded Decommissioning Programme (FDP) approved by the Secretary of State (SoS) for Energy and Climate Change before construction of a new nuclear power station begins and to comply with this FDP thereafter.

An FDP should include:

- (1) A Decommissioning and Waste Management Plan (DWMP) which sets out and costs the steps involved in decommissioning a new nuclear power station and managing and disposing of hazardous waste and spent fuel.
- (2) A Funding Arrangements Plan (FAP) which sets out acceptable financing proposals to meet the costs identified.

The SoS will call on the advice of the Nuclear Liabilities Financing Assurance Board (NLFAB) in assessing the constituent parts of the FDP.

When considering whether or not to approve or modify an FDP, the draft Guidance lists a series of factors which the SoS will consider including whether the FDP contains realistic, clearly defined and achievable plans and whether it contains robust cost estimates which take due account of risk and uncertainty.

However, the list of Guidance Factors does not include any mention of public consultation or parliamentary oversight. The Guidance should state that no FDP can be agreed with the SoS and industry without public input or Parliamentary oversight. Similarly modifications to any agreement which impact significantly on funding, or the practical arrangements concerning decommissioning, waste and spent fuel management and disposal, must be open for public input and Parliamentary scrutiny.

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Paragraph 2a.2 encourages nuclear operators to publish as much of the FDP as possible except for material of a sensitive nature, but this doesn't appear to be until after approval by the SoS.

Decommissioning and Waste Management Plan (DWMP)

The aim of the DWMP is to demonstrate that decommissioning of the nuclear power station and management and disposal of waste can be undertaken in a way which is prudent and consistent with the requirements and expectations of the safety, security and environmental regulators. The consultation document says:

"...it is designed to ensure that a plan for these activities, [decommissioning, management and disposal of waste] based on established techniques and steps, is prepared prior to the construction of the nuclear power station."

It is difficult to see how waste 'disposal' in a deep geological disposal facility can be described as "an established technique", given that there are no operating facilities for spent fuel anywhere in the world.

The Draft Guidance distinguishes between 'technical matters' and 'designated technical matters'. The key difference between them is that the cost of non-designated technical matters are to be met by the operator from operational expenditure, while the costs of designated technical matters must be provided for in the independent Fund which operators will be expected to set up. Table 3 (pages 50-52) sets out a summary of principal cost streams and whether the cost will be met from operational expenditure or the independent Fund. Operational Low Level Waste (LLW), for example, should be dealt with as part of operational expenditure, whereas dealing with decommissioning LLW should be paid for from the independent fund. The table also highlights two principle costs streams which are included in the Waste Transfer Pricing Scheme (see below) – disposal of operational and decommissioning ILW and disposal of spent fuel.

Page 34 of the consultation document discusses a generic lifecycle plan for new nuclear power stations known as the "Base Case". Table 2 (pp 40-49) lists a complete set of assumptions which underlie the base case.

An approvable FDP will require the operator to demonstrate that a credible disposal route for the ILW and spent fuel has been identified. The Base Case assumes that this will be in a Geological Disposal Facility (GDF) that the Government will construct to dispose of higher activity radioactive wastes. The terms on which the Government will agree to take title to and liability for an operator's ILW and spent fuel are expected to be set out in a contract to be agreed between the operator and the Government alongside the operator's FDP. **But again there appears to be no provision for public comment or parliamentary scrutiny of the terms of these contracts.**

The Base Case assumes that new reactors will operate for 40 years. However the Government recognises that most current station designs, including those undergoing the UK Generic Design Assessment, anticipate an operational life of at least 60 years and it will be open to operators to justify alternative station lifetimes.

Paragraph 2b.32 states that the Base Case assumes that the spent fuel from a new nuclear power station is kept in interim storage on the site of the power station until the point at which it is disposed of in a GDF, and that the encapsulation of spent fuel is also carried out on-site. However regional or centralized facilities seems to be the nuclear industry's preferred option. This means the first set of approved FDPs will probably be based on long-term storage of spent fuel at reactor sites. But these could be modified later if the centralized storage option goes ahead. This raises several questions. **The most obvious place to locate a central store and encapsulation facility would be as part of the surface facilities for a GDF. But the Government's policy for siting a GDF is that it should be based on 'voluntarism'. Does this mean that communities should also be asked to volunteer for a central store and encapsulation facility? If the answer is**

yes, then surely communities living near new reactor sites should also be asked to volunteer for local storage and encapsulation facilities.

Funding Arrangements Plan

The Funding Arrangements Plan (FAP) should set out the operator's detailed arrangements for one or more Funds to deliver sufficient assets to meet the estimated costs of carrying out the plans as set out in the DWMP for the designated technical matters. Any structure proposed for the Fund must ensure its independence from the operator and protection from claims by the operator, other than in accordance with the FDP.

The FAP is expected to set out an Investment Strategy designed to ensure that the assets which the Fund receives from the operator will be appropriately invested to generate the sums necessary to meet the estimated costs of carrying out the plans as set out in the DWMP for the designated technical matters. The FAP should include mechanisms to enable liabilities to be met in full and on their due date in the event of an insolvency of the operator or an associated company. The FDP should set out how a nuclear operator would make good any shortfall or risk of shortfall in the accumulated assets held by the Fund.

Waste Transfer Pricing methodology consultation

The Government is also consulting on an updated Waste Transfer Pricing (WTP) methodology. (6) This is the new name for the Fixed Unit Price (FUP) methodology, which was consulted on in March 2010. (7) And this was preceded by three discussion papers published in Autumn 2008 and Spring 2009 (8) The WTP consultation includes the Government's response to comments made on the FUP consultation.

The Energy Act 2008 contains clauses to ensure funding provision is made by reactor developers for their full share of waste management costs. The Government indicated that the 'fair share' for waste 'disposal' would be calculated as the proportion of space nuclear operators' radioactive waste takes up in any repository. This series of consultations has been about deciding on the methodology for calculating this 'fair share'.

Originally the Labour government had planned to charge the industry a high risk premium as part of a fixed, disposal levy tied to the amount of nuclear waste it produced, and had told the industry that responsibility for the waste should be transferred to the state only once the waste had been disposed of, which couldn't happen before 2130 at the earliest. Both proposals were deeply unpopular with the industry. In March 2010, the Labour government published revised proposals that made significant concessions on both issues.

Firstly it was proposed to defer the setting of the Fixed Unit Price (FUP). Nuclear operators would instead be offered an "expected Fixed Unit Price" (now just referred to as the Expected Price). The reason for the deferral is because setting a Fixed Price at the end of the deferral period, after a waste disposal site has been selected, can be expected to be much more accurate. The Expected Price provided by the Government is likely to include a smaller risk premium and therefore be lower than any Fixed Price offered at that time. The Expected Price will be reviewed every five years.

Second it was proposed that the Government should take title to nuclear waste and spent fuel much earlier, so that it is aligned with the operators decommissioning timetable rather than waiting for the Geological Disposal Facility (GDF) to be available. This means the operators don't have to be responsible for onsite interim storage of waste and spent fuel for several decades after revenues from the nuclear power station had ceased, plus it transfers a significant risk that the cost of geological disposal will escalate to the taxpayer. The Government continues to insist that taking title to radioactive waste, including spent fuel, for a fixed price is not a subsidy to new nuclear power, provided that the price properly reflects any financial risks or liabilities assumed by the state.

In this draft revised methodology there are two significant changes. Firstly the Deferral Period before setting the Fixed Price will be 30 years after the start of generation rather than 10. Secondly the Final Price will be subject to a Cap, and in return a Risk Fee will be charged. The final price each company expects to pay will not exceed the cap, no matter what happens!

The NDA estimates that a Geological Disposal Facility (GDF) will be ready to start accepting waste – albeit legacy waste at first – in 2040. The reason for the 30 year deferral period is that by 2040 upfront costs of constructing the GDF should be known and actual data relating to the costs of emplacing waste in the GDF will start to become available. But given the history of delays in projects connected to the nuclear industry, this date appears optimistic.

Given the operational 'life' of most reactors to date has been approximately 30 years the deferral period is too long. The Government has said industry will have to save money for decommissioning and waste disposal from when reactor operations begin, but the 30 year proposal risks leaving too little time to make up costs if there is a deficit or if reactors close earlier than anticipated. There is a risk of the taxpayer having to find the additional money if the industry is allowed too much time before it has to commit to a final price. Offering a maximum price cap before construction presents too much of a risk of taxpayers ending up funding for any shortfall.

The Government admits that there will be uncertainty over the size of the operator's final waste disposal liability during the deferral period and therefore a greater the risk that the operator fails to make prudent provision for their liability. (para 2.2.11) One of the uncertainties is whether or not a second GDF might be required – either because the volume of new build waste is too high to be accommodated by a single repository, or because co-disposal of legacy waste and new build waste proves to be infeasible. The Government acknowledges that a second GDF may be required (para 2.2.1)

As recently stated at the CoRWM meeting in Manchester (Feb 8th & 9th) it is clear that “*neither the baseline inventory nor the Upper Inventory [used by DECC] are anywhere near realistic*”. The Environment Agency (EA) has set a limit on the risk that may be caused by the burial of radioactive wastes of 10^{-6} (i.e. one in a million) i.e. the risk of a person contracting non-fatal cancer, fatal cancer or inherited defects must be less than one in a million. (9) However, the NDA's Disposability Assessment Report for waste arising from the new European Pressurised waste Reactor (EPR) states:

“...a risk of 5.3×10^{-7} per year for the lifetime arisings of a fleet of six EPR reactors each generating a lifetime total of 900 canisters is calculated.” (10)

This is more than half the total risk of 10^{-6} allowable for a GDF. An upper radioactive waste inventory which takes into account the possibility of a 16GW programme (ten EPRs or 6 EPRs and 6 AP1000s) and AGR life extensions will probably indicate, therefore, that two GDFs will be required.

The Price Cap

The March consultation said that deferring the setting of a Fixed Unit Price meant the operator would be accepting the risk that a Price set at a later date could be higher than the Price on offer at the outset, if estimated costs escalate sufficiently in the intervening period. Now the Government has decided this is too much of a risk for the operators to bear. It says:

“It will be difficult for an operator to accept such a risk, given that there is very little the operator can do to manage and mitigate it. In contrast, the Government does have capacity to manage risks around waste disposal costs, as these costs will be heavily influenced by the manner in which the Government implements geological disposal.” (para 3.2.8)

The question is **how exactly would the Government manage these risks if costs begin to escalate?** It seems that there might be two or three possibilities here:

- (1) The Government could increase the limit on the risk that may be caused by the burial of radioactive wastes of 10^{-6} (i.e. one in a million) in order to reduce costs, or
- (2) The Government could order the repository company to reduce costs by using inferior materials which may compromise safety, or
- (3) The taxpayer could be asked to shoulder the costs over and above the cap.

None of these options are acceptable. The Government needs to set some limits here if it wants to continue claiming operators will be forced to pay their full share of waste management costs.

The Government says the Cap will be set at a level where the Government has a very high level of confidence that actual cost will not exceed the Cap.

GDF delays

The Government accepts that First Waste Emplacement might not have taken place by the end of the Deferral Period (2048). However it believes that it should be possible to provide a fairly accurate cost estimate provided that a site has been selected. Under these circumstances the Final Price given to operators would include a risk premium. However, if a site has still not been selected by 2048 the Final Price would probably be set close to the price cap.

Fixing the Price

The Final Price will be the cost of disposing of the ILW and spent fuel on the assumed disposal date. If the Final Price is set at the end of the deferral period (i.e. not earlier because of an operator request for a fixed price) this will be in 2048. However, new build spent waste fuel will probably not be emplaced in the GDF until 2130, some 82 years later. (According to Table 3 of the FDP consultation, the Independent Decommissioning Fund should pay for the cost of storage of spent fuel after the reactor has closed – even after the Government has taken title to the waste at the transfer date when decommissioning has been completed – the Base Case assumes prompt decommissioning after station closure.) Although the price will be fixed in 2048, the money won't be handed over to the Government until the Transfer Date when decommissioning has been completed, which is likely to be much closer to the end of the century. The consultation document indicates that decommissioning should be completed for the first reactors by 2080. In other words the Transfer Date would be 50 years before the Assumed Disposal Date. So, because payment will be made by the operator earlier than the waste will be emplaced, the Government says it is necessary to adjust the payment made by the operator to reflect this early payment. This will be done through the application of an appropriate discount rate to the Final Price to reflect the time difference.

Table 4 of the consultation document shows that a Final Price of £226m in 2080 – the assumed waste disposal liability for one nuclear station - is expected to be worth £670m in 2130. Greenpeace commissioned independent nuclear expert Ian Jackson to undertake an impartial assessment of the March 2010 proposals. He said there are good reasons for not discounting prices when faced with very long term nuclear liability cash flows. The discounted pricing assumes that £226m cash paid in 2080 is worth £670m in 2130, but this may not necessarily be true in the real world. In other words the stock market is expected to pay almost 70% of the total disposal cost. The only way to guarantee utilities pay the full costs of disposal is to charge them the actual cost. Estimating realistic disposal prices 100 years into the future is fraught with difficulty. Moreover under present financial conditions stock market returns will not be sufficient to pay for the majority of a utility's spent fuel liabilities. (11)

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